

## **ABSTRACT**

A disjoint graph structure for packet classification in communication systems is presented. The disjoint graph is comprised of two types of data structures; an elementary interval tree (EIT) and a disjoint interval tree (DIT). The disjoint graph is constructed based on a range-specified rule set finding particular application in the classification of data packets. Each rule in the rule set has an equal number of fields and each field specifies a range referred to as an integer interval having a lower and an upper bound. The disjoint graph has the same number of layers as there are fields in each rule. The layers are comprised of nodes, and each node has an associated rule set selected from the range-specified rule set. The disjoint graph enables packet classification in only one pass through the tree. The EIT and DIT structures are also presented in detail.